

1 1. In a computer system including a processing unit, a hardware graphics unit,
2 and a display device for displaying an image, the hardware graphics unit capable of
3 responding to function calls received via an application program interface, the display
4 device having a plurality of pixels, at least some of the plurality of pixels including a
5 plurality of pixel sub-components each of a different color, a method for rendering sub-
6 component-oriented characters within the displayed image using the hardware graphics
7 unit, the method comprising the following:

8 an act of generating a bit-map representation of a sub-component-oriented character
9 by using a sample to generate each pixel sub-component; and

10 an act of rendering the sub-component-oriented character on the display device by
11 making one or more function calls to the hardware graphics unit using the application
12 program interface.

13
14 2. A method in accordance with Claim 1, wherein the act of rendering the sub-
15 component-oriented character on the display device comprises the following:

16 an act of blending the sub-component-oriented character on a background by
17 making one or more function calls to the hardware graphics unit.

18
19 3. A method in accordance with Claim 2, wherein the act of blending the sub-
20 component-oriented character on the display device comprises the following:

21 an act of blending the sub-component-oriented character on a non-solid background
22 image by making one or more function calls to the hardware graphics unit.

1 4. A method in accordance with Claim 2, wherein the act of blending the sub-
2 component-oriented character comprises the following:

3 an act of blending the sub-component-oriented character on a background using a
4 semi-transparent brush by making one or more function calls to the hardware graphics unit.
5

6 5. A method in accordance with Claim 1, wherein the act of rendering the sub-
7 component-oriented character on the display device comprises the following:

8 an act of rotating the sub-component-oriented character on a background by
9 making one or more function calls to the hardware graphics unit.
10

11 6. A method in accordance with Claim 1, wherein the act of rendering the sub-
12 component-oriented character on the display device comprises the following:

13 an act of scaling the sub-component-oriented character on a background by making
14 one or more function calls to the hardware graphics unit.
15

16 7. A method in accordance with Claim 1, wherein the act of rendering the sub-
17 component-oriented character on the display device comprises the following:

18 an act of rendering the sub-component-oriented character on the display device by
19 making one or more function calls that are compatible with DirectX.
20

21 8. A method in accordance with Claim 1, wherein the Application Program
22 Interface is configured to treat each pixel as a single luminance intensity source, rather
23 than treating each pixel sub-component as a single luminance intensity source.
24

1 9. A method in accordance with Claim 8, wherein the method further
2 comprises the following:

3 an act of processing the sub-component-oriented character to interface with the
4 Application Program Interface.

5
6 10. A method in accordance with Claim 9, wherein the act of rendering the sub-
7 component-oriented character on the display device comprises the following:

8 an act of defining a color channel for each pixel sub-component type; and

9 an act of separately populating a distinct color buffer for each color channel.

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1 11. A computer program product for use in a computer system that includes a
2 processing unit, a hardware graphics unit, and a display device for displaying an image, the
3 hardware graphics unit capable of responding to function calls received via an application
4 program interface, the display device having a plurality of pixels, at least some of the
5 plurality of pixels including a plurality of pixel sub-components each of a different color,
6 the computer program product for implementing a method for rendering sub-component-
7 oriented characters within the displayed image using the hardware graphics unit, the
8 computer program product comprising one or more computer-readable media having
9 stored thereon the following:

10 computer-executable instructions for generating a bit-map representation of a sub-
11 component-oriented character by treating each pixel sub-component as a distinct
12 luminance intensity source; and

13 computer-executable instructions for making one or more function calls to the
14 hardware graphics unit using the application program interface, the function calls
15 configured to cause the hardware graphics unit to render the sub-component-oriented
16 character on the display device.

17
18 12. A computer program product in accordance with Claim 11, wherein the one
19 or more computer-readable media are physical storage media.

20
21 13. A computer program product in accordance with Claim 11, wherein the
22 computer-executable instructions for making one or more function calls to the hardware
23 graphics unit comprise the following:

1 computer-executable instructions for making one or more function calls to the
2 hardware graphics unit that cause the hardware graphics unit to blend the sub-component-
3 oriented character on a background.

4
5 14. A computer program product in accordance with Claim 13, wherein the
6 computer-executable instructions for making one or more function calls to the hardware
7 graphics unit that cause the hardware graphics unit to blend the sub-component-oriented
8 character on a background comprise the following:

9 computer-executable instructions for making one or more function calls to the
10 hardware graphics unit that cause the hardware graphics unit to blend the sub-component-
11 oriented character on a non-solid image background.

12
13 15. A computer program product in accordance with Claim 13, wherein the
14 computer-executable instructions for making one or more function calls to the hardware
15 graphics unit that cause the hardware graphics unit to blend the sub-component-oriented
16 character on a background comprise the following:

17 computer-executable instructions for making one or more function calls to the
18 hardware graphics unit that cause the hardware graphics unit to blend the sub-component-
19 oriented character on a background using a semi-transparent brush.

20
21 16. A computer program product in accordance with Claim 11, wherein the
22 computer-executable instructions for making one or more function calls to the hardware
23 graphics unit comprise the following:

1 computer-executable instructions for making one or more function calls to the
2 hardware graphics unit that cause the hardware graphics unit to rotate the sub-component-
3 oriented character on a background.

4
5 17. A computer program product in accordance with Claim 11, wherein the
6 computer-executable instructions for making one or more function calls to the hardware
7 graphics unit comprise the following:

8 computer-executable instructions for making one or more function calls to the
9 hardware graphics unit that cause the hardware graphics unit to scale the sub-component-
10 oriented character on a background.

11
12 18. A computer program product in accordance with Claim 11, wherein the
13 computer-executable instructions for making one or more function calls to the hardware
14 graphics unit comprise the following:

15 computer-executable instructions for making one or more function calls to the
16 hardware graphics unit using DirectX.

17
18 19. A computer program product in accordance with Claim 11, wherein the
19 computer-executable instructions for making one or more function calls to the hardware
20 graphics unit comprise the following:

21 computer-executable instructions for processing the sub-component-oriented
22 character to interface with the Application Program Interface.

23

1 20. A computer program product in accordance with Claim 11, wherein the
2 computer-executable instructions for making one or more function calls to the hardware
3 graphics unit comprise the following:

4 computer-executable instructions for defining a color channel for each pixel sub-
5 component type; and

6 computer-executable instructions for separately populating a distinct color buffer
7 for each color channel.

8
9 21. A computer program product in accordance with Claim 11, wherein the
10 computer-executable instructions for making one or more function calls comprise the
11 following:

12 computer-executable instructions for providing an inter-pixel interpolation of glyph
13 data by means of graphics hardware.

22. A computer system comprising the following:

- a processing unit;
- a hardware graphics unit configured to respond to function calls via an application program interface;
- a display device for displaying an image and having a plurality of pixels, at least some of the plurality of pixels including a plurality of pixel sub-components each of a different color; and
- one or more computer-readable media having computer-executable instructions stored thereon that, when executed by the processing unit, are configured to instantiate the following:
 - a scaling unit configured to overscale a character representation;
 - a scan conversion unit configured to place the overscaled character representation on a grid, and configured to assign at least a luminance intensity value to each grid position based on the properties of the overscaled character representation at that grid position, wherein each grid position corresponds to a particular pixel sub-component, wherein each pixel sub-component of the overscaled character representation corresponds to one or more grid positions; and
 - an adaptation module configured to make one or more function calls to the hardware graphics unit through the application program interface using at least the luminance intensity values assigned to each grid position to cause the hardware graphics unit to render the character represented by the character representation.